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IS 5579 (1985): Neon Testers [ETD 32: Electrical Appliances]

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AMENDMENT NO. 1 AUGUST 1992
TO
IS 5579 : 1985 SPECIFICATION FOR NEON TESTERS

(First Revision)

Substitute 'IS 302-1(1979) Safety of household and similar electrical appliances : Part 1 General requirements (*fifth revision*)' *for* 'IS 302 : 1979 General and safety requirements for household and similar electrical appliances (*fifth revision*)' wherever it appears in the standard.

(ETD 32)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR NEON TESTERS

(First Revision)

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(*Continued on page* 2)

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Indian Standard

SPECIFICATION FOR NEON TESTERS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 25 June 1985, after the draft finalized by the Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard was first published in 1970. The present revision has been undertaken to align this standard with IS : 302-1979* which is primarily based on the latest IEC Publication. For the sake of convenience of reference, the format of the standard has been modified to bring in line with IEC Publications on household electrical appliances.

0.3 Neon testers, because of their low cost, are widely used for qualitative testing of live points and continuity in electrical circuits. This standard has been prepared to provide guidance for the manufacture and supply of these items to ensure reliable operation and personal safety against electric shock.

0.4 This standard is to be read in conjunction with IS : 302-1979*. For the sake of convenience, the clauses of this standard correspond to those of IS : 302-1979*. Instead of reproducing full text of each clause, clauses of IS : 302-1979* which are applicable (which means that relevant provisions of the clause apply) or not applicable and the sub-clauses or portions thereof which are not applicable are indicated as under:

a) In case of a clause where it is applicable or not applicable, the wording used is "This clause of IS : 302-1979 is applicable/not applicable".

b) In case of a sub-clause or part thereof 'Not applicable'.

Wherever a sub-clause of IS : 302-1979* is to be replaced by a new text, it has been indicated as under:

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*General and safety requirements for household and similar electrical appliances (*fourth revision*).

'Replacement — followed by the new text'.

Any addition to the existing provisions of a sub-clause of IS : 302-1979* has been indicated as under:

'Addition — followed by the text of the additional matter'.

Clauses/tables which are additional to those of IS : 302-1979* are numbered starting from 101 and additional sub-clauses are numbered with the main clause number followed by 101, 102, etc, for example 7.101.

Additional appendices have been numbered starting from AA.

Should however any deviation exist between IS : 302-1979* and this standard, the provisions of the latter shall apply.

0.5 This standard is one of a series of Indian standards on domestic, household and similar electrical appliances.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for common type of neon testers for use on circuits not exceeding 250 volts ac or dc.

2. TERMINOLOGY

2.0 For the purpose of this standard, definitions given in IS : 302-1979* and the following shall apply.

2.1 Neon Tester — A device for quick and easy testing of live points and continuity in electrical circuits using a neon filled glow lamp with suitable series resistance housed in a case of insulating material.

NOTE — A neon tester also distinguishes ac from dc supply by glow being on both electrodes or one electrode only respectively.

2.2 Probe — The exposed metal part of neon tester which is meant for contact with live part under test.

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*General and safety requirements for household and similar electrical appliances (*fifth revision*).

†Rules for rounding off numerical values (*revised*).

3. RATING

3.1 The neon tester shall be suitable for use on circuits with voltage from 100 to 250 volts.

4. MATERIAL, DESIGN AND CONSTRUCTION

4.1 The relevant provisions of **22** of IS : 302-1979* shall apply.

4.2 When a neon tester is designed in the shape of a screw driver, it shall have point size as given for electrician screw driver in accordance with **3.2** of IS : 844 (Part 2)-1979†.

5. GENERAL AND SAFETY REQUIREMENTS

5.1 Protection Against Electric Shock — While the tester is in use the probes shall not be accessible to prevent inadvertant touching and shock. The length of uninsulated part of the probe shall not exceed 10 mm.

5.2 The temperature limits as specified in Table 1 of IS : 302-1979* shall apply.

5.3 Electrical Insulation — The provisions of **13.3** of the IS : 302-1979* shall apply with the modification that high voltage test shall be carried out at 2 000 V ac.

5.4 Moisture Resistance — The relevant provisions of **15** of IS : 302-1979* shall apply.

5.5 Mechanical Strength — The relevant provisions of **21** of IS : 302-1979* shall apply.

6. PERFORMANCE REQUIREMENTS

6.1 Operation at Over and Under Voltage

6.1.1 The tester shall be capable of continuously working at maximum voltage of working voltage range for which it is designed (*see* **3.1**).

6.1.2 The tester shall give an indication by a visible flow in normal day light in a room while connected to a voltage of 90 V dc or 60 V ac.

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*General and safety requirements for household and similar electrical appliances (*fifth revision*).

†Specification for screw drivers: Part 2 Dimensions.

7. MARKING

7.1 Unless otherwise specified, each tester shall be marked with the following:

a) Manufacturer's name or trade-mark,
b) Working voltage range, and
c) Country of origin.

7.1.1 The neon tester may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7.2 Features of Marking — The relevant provisions of **7** of IS : 302-1979* shall apply.

7.3 Each tester shall be accompanied by a sheet containing necessary instructions, including precautions to be taken for its use.

8. TESTS

8.1 General Conditions for Tests — Unless otherwise specified in the relevant clauses, the conditions specified in **4** of IS : 302-1979* shall apply.

8.2 Type Tests — The tests specified in Table 1 shall constitute type tests and shall be carried out on five samples of neon testers of the same model, type and rating, selected preferably at random from a regular production lot.

8.2.1 All samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the samples fail(s) in any of the type tests, the testing authority, at its discretion, may call for fresh samples not excluding twice the original number and subject them again to all tests or to the test(s) in which failures had occured. No failure shall be permitted in the repeat test(s).

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*General and safety requirements for household and similar electrical appliances (*fifth revision*).

TABLE 1 SCHEDULE OF TYPE TESTS

(*Clause* 8.2)

Sl No.	Tests	Clause Reference	
i)	Visual examination and inspection	8.5	
ii)	High voltage	13.3	of IS : 302-1979*
iii)	Moisture resistance	15	
iv)	Insulation resistance	16.3	
v)	Leakage current	13.2	
vi)	Operation at over and under voltage	8.6	
vii)	Mechanical strength	8.7	
viii)	Resistance to rusting	31	of IS : 302-1979*
ix)	Fire resistance properties	30.2	
x)	Ageing on insulating body	8.8	
xi)	Current at maximum operating voltage	8.9	
xii)	Torque test (for testers designed in the shape of screw driver point)	8.10	
xiii)	Dimensions	4.2	

8.3 Acceptance Tests — The following shall constitute the acceptance test:

Tests	*Clause Reference*	
a) Visual examination and inspection	8.5	
b) High voltage	13.3	of IS : 302-1979*
c) Moisture resistance	15	
d) Insulation resistance	16.3	
e) Leakage current	13.2	
f) Operation at over and under voltage	8.6	
g) Current at maximum operating voltage	8.9	

8.3.1 A recommended sampling procedure for acceptance tests is given in Appendix A.

8.4 Routine Tests — The following shall constitute routine tests:

Tests	*Clause Reference*	
a) Visual examination and inspection	8.5	
b) Leakage current	13.2	of IS : 302-1979*
c) High voltage	13.3	
d) Insulation resistance (dry)	16.3	

NOTE 1 — High voltage test as a routine test may comprise a flash test at a voltage of 2 000 V ac.

NOTE 2 — Insulating resistance (dry) test as routine test may be done without any conditioning.

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*General and safety requirements for household and similar electrical appliances (*fifth revision*).

8.5 Visual Examination and Inspection — The neon tester shall be inspected for conformity with the relevant requirement specified in **4**, **5**, **6** and **7**.

If provided with a screw driver bit as a probe, the construction shall be such that it is suitable for connecting wires to the small wiring accessories.

8.6 Operation at Over and Under Voltage — The neon tester shall be subjected to a voltage of 90 V dc and 60 V ac each time. The tester shall give an indication by a visible glow in normal daylight in the test room in both cases.

8.6.1 The neon tester shall be connected to a voltage 1.1 times, the maximum voltage of the voltage range ac or dc for 48 hours in accordance with **18.2** of IS : 302-1979*. There shall not be any damage impairing further use of neon tester. The temperature rise shall not exceed limits of Table 1 of IS : 302-1979*. There shall be no visible darkening of the body of the lamp due to this test.

8.7 Mechanical Strength — The neon tester shall be tested in accordance with **21** of IS : 302-1979* excepting that test blows shall not be applied on visual indicating part.

8.8 Ageing — The neon tester shall be in immersed in water at a temperature of 60 + 5°C and kept for one minute. After this, the tester shall be immersed in an ice cold water bath at a temperature of 0 ± 5°C for one minute. One hundred such cycles shall be made. No cracks shall develop on the body of the neon tester.

NOTE — This test is to be carried out on the insulating handle only after taking out the neon discharge lamp, resistance spring.

8.9 Current at Maximum Operating Voltage — The current passing through the neon tester at maximum voltage of the range shall not exceed 300 μ A (peak). The supply at 50 Hz is connected to the tip of the blade of neon tester and the point meant for human contact through a micro-ammeter. The resistance of measuring circuit is 2 000 ± 100 Ω.

8.10 Torque Test — The neon tester designed in the shape of a screw driver shall be subjected to torque test in accordance with **8.1** of IS : 844 (Part 1)-1979† and shall meet the requirements specified therein.

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*General and safety requirements for household and similar electrical appliances (*fifth revision*).

†Specification for screw drivers: Part 1 Technical supply conditions.

APPENDIX A

(*Clause* 8.3.1)

SAMPLING PROCEDURE FOR NEON TESTERS

A-1. LOT

A-1.1 In any consignment, all the neon testers of the same make, model, type, ratings and manufactured under similar conditions of production shall be grouped together to constitute a lot.

A-2. SELECTION OF SAMPLE

A-2.1 From each lot a certain number of neon testers as prescribed in Table 2 shall be selected at random, and subjected to acceptance tests specified in **8.3**.

A-2.2 The number of neon testers N_1 to be selected from the lot shall depend upon the size of the lot and shall be in accordance with col 2 of Table 2.

A-2.2.1 If required for repeat tests (*see* **A-3.2**), additional number of neon testers (N_2) as given in col 3 of Table 2 shall be selected at random.

TABLE 2 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

(*Clauses* A-2.1, A-2.2, A-2.2.1 *and* A-3.1)

Lot Size	First Sample N_1	Second Sample N_2	Acceptance Number C_1	Rejection Number C_2
(1)	(2)	(3)	(4)	(5)
Up to 50	5	10	0	2
51 to 100	7	14	0	2
101 to 200	10	20	0	3
201 to 300	13	26	0	3
301 to 500	20	40	1	4
501 and above	25	50	1	5

A-3. CRITERIA FOR CONFORMITY

A-3.1 The lot shall be considered as conforming to the requirements of acceptance tests if the number of failures in the sample is less than or equal to acceptance number C_1 given in col 4 of Table 2. If the number of failures is greater than or equal to the rejection number C_2 as given in col 5 of Table 2, the lot shall be considered as not conforming to the requirements of the acceptance tests.

A-3.2 If the number of failures is between C_1 and C_2 a further sample of N_2 neon testers shall be selected and subjected to the acceptance tests. If the number of failures in the two samples combined is less than C_2 the lot shall be considered as conforming to the requirements of the acceptance tests, otherwise not.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	*newton*	*N*	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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